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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,366	08/27/2003	Ryuji Yamamoto	Q71765	3699
23373	7590	01/26/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			VIJAYAKUMAR, KALLAMBELLA M	
			ART UNIT	PAPER NUMBER
			1751	

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,366

Applicant(s)

YAMAMOTO ET AL.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 and 19-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8 and 18 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Applicant's election without traverse of Group-I, Claims 1-8 and 18 in the reply filed on 11/07/2005 is acknowledged. Claims 9-17 and 19-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 1-23 are pending with the application.

The examiner has considered the IDS filed 12/08/2003.

Acknowledge the claim of domestic priority over Provisional Application No 60/407,704 filed 09/04/2002.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3, 7-8 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimura et al (WO 00/58536).

The US Patent 6,489,026 issued to Nishimura et al is being used as an English translation for WO 00/58536 in the present rejection.

Nishimura et al teach graphitized boron doped branched vapor grown carbon fibers (VGCF) that are hollow with a particle size of 0.01-1 micron, an aspect ratio of 10 or more, a length of 100-400 microns, a resistivity of 0.01 ohm.cm or less, and a boron content of 0.1-3 mass% (Col-2, Ln 54-60; Col-3, Ln 13-19; Col-3, Ln 62 to Col-4, Ln 28; Col-5, Ln 53-56, Col-6, Ln 38 to Col-7, Ln 40, Col-8, Ln 9-21, 26-

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35; Col-10, Ln 56-Col-11, Ln 8). With regard to the multi-layer structure of carbon fiber containing a plurality of graphene sheets and the structure of the end surface of the carbon fiber in claim-1, and the presence of continuity at the periphery per claim-3, the prior art composition is identical to that by the applicants, and further made by the catalyzed decomposition of hydrocarbons by injecting seed particle dispersion or catalyst solution such as ferrocene in to the reactor along with the reactant forming the VGCF, crushing the carbon fibers and graphitizing the fiber in presence of a boron containing catalyst, wherein the composition and process of making the graphitized carbon fiber are identical to that by the applicants (Specification, Pages 20-22) and identical compositions possess identical properties and characteristics.

With regard claims 7-8, the prior art teaches 0.1-3 mass% boron doped VGCF and carbon fibers with an R value of Raman spectrum to be 0.5 or more and the peak width of half height peak of the spectrum at 1580 cm^{-1} to be $20\text{--}40\text{ cm}^{-1}$ (Col-5, Ln 47-52).

With regard to claim-18, the prior art teaches a mixture of 3-10% VGCF in graphite (Col-15, Example-6). All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 1 and 3-4 are rejected under 35 U.S.C. 102(a) as being anticipated by Morita et al (JP 2002-146634).

Morita et al teach the structure and composition of 0.05-10 mass% boron doped and graphitized carbon fiber having multiple-layer structure with cylindrical carbon sheets overlapping over each other, a center axis with an hollow structure, an OD of 2-30 nm, an aspect ratio of 10-15,000 wherein at least one layer of the cylindrical carbon sheet is turned at the end of the carbon fiber to be continuous with another cylindrical sheet among the multiple layers so that turned and continuous cylindrical carbon sheet forms a cylinder of which the end opens and the structure that meets the limitation of the instant claims (Abstract, Para 0026, Figure). Furthermore, the prior art method of making the composition is identical to that by the applicants (Para 0021-0026; Specification: Pages 20-22). All the limitations of the instant claims are met.

The reference is anticipatory.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al (WO 00/58536).

The disclosure on the composition and making of the boron doped VGCF by Nishimura et al as set forth in rejection-1 is herein incorporated.

The prior art is silent about the surface area of the carbon fiber.

The composition and particle size of the hollow VGCF of the prior art are similar to that by the applicants, and furthermore made by similar process using similar components, having same utility as the electrode filler and similar compositions are expected to possess similar properties.

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al (WO 00/58536).

The disclosure on the composition and making of the boron doped VGCF by Nishimura et al as set forth in rejection-1 is herein incorporated.

The prior art fails to teach the partial closing of at least one region of the hollow space of the carbon fiber.

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The composition and particle size of the hollow VGCF of the prior art are similar to that by the applicants, made by similar process using similar components and crushed with similar techniques such as impact force, and collapsing of the fiber wall under impact force partially closing the hollow space would be obvious.

3. Claim 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al (JP 2002-146634).

The disclosure on the composition and making of the boron doped VGCF by Morita et al as set forth in rejection-2 is herein incorporated.

The prior art fails to teach the surface area and the Raman spectral characteristics of the carbon fiber.

The composition, characteristics and particle size of the hollow VGCF of the prior art are similar to that by the applicants, and furthermore made by similar process using similar components and similar compositions are expected to possess similar properties.

Allowable Subject Matter

Claim 2 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Prior art of record neither teaches nor fairly suggest a graphitized carbon fiber comprising a bent portion formed of at least three of graphene groups per the claim.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8-5.30 Mon-Thu, 8-4.30 Alt Fri.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
January 19, 2006.


Mark Kopec
Primary Examiner